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INTERLOCKING DEVICES

The invention relates to interlocking devices, and particularly to devices for locking components together, for a variety of purposes.

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The invention provides an interlocking device for locking components together, comprising a first tubular component, a second component arrangeable to interconnect with the first component, the second component having an opening which, in use, lies within the hollow interior of the first component, and
10 a third component insertable into the opening to lie within the hollow interior of the first component thus locking all three components together.

The invention enables components to be interlocked in a very robust and secure manner, without the use of special tools.

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The second component may fit into a slot in a side wall of the first component.

One embodiment of interlocking device according to the invention comprises a pallet in which a plurality of second first components are spaced apart to
20 comprise main structural members of the pallet and a plurality of said second components are spaced apart to comprise secondary structural members of the pallet.

Many industries produce rolls of their product, from paper and plastic to steel.
25 Cylindrical loads such as these rolls need a product (usually a pallet) to assist in handling, storage and transportation.

A pallet according to the invention may be shaped to support a cylindrical load such as a roll, the secondary structural members comprising cross members
30 which act as chocks to retain the roll in position.

Thus, this embodiment of the invention enables rolls to be palletised without the need for strapping. The embodiment also allows the rolls to be handled by the various derivatives of forklift and pallet trucks. The embodiment enables rolls to be stored in racking and can be used for transporting and shipping of the rolls.

This embodiment may be such that the position and height of the chocks can be varied during construction to accommodate any desired size and weight of cylindrical load.

An additional chock may be provided to aid loading and unloading. Such a chock can be used to prevent the roll from overshooting during loading.

If desired a saddle may be provided to support a roll, instead of or in addition to chocks.

In another embodiment of the invention, the second component fits into an aperture extending through side walls of the first component.

For example the interlocking device may comprise a fence in which a plurality of said first components are spaced apart to form upright posts of the fence and at least one of said second components extends between at least two uprights to form a cross rail of the fence.

The rails may be set at various angles to allow the fence to change direction, for example to go round corners.

An upright post may be secured into ground using foundation bars.

Laths or panels may extend between spaced apart upright posts.

The interlocking device may be such that two third components are inserted into each second component, the two third components being spaced apart to abut respectively against opposite inner walls of the first component, thus preventing the second component from moving with respect to the first component.

Each component may comprise a tube and the tubes may have a substantially square cross section.

The components may be made from plastics material, metal or wood, or from a combination of these materials.

By way of example, specific embodiments of the invention will now be described, with reference to the accompanying drawings in which:

Figure 1 is a perspective view of one embodiment of the invention comprising a pallet;

Figure 2 is a side view of the pallet, showing the inside of the main structural members of the pallet;

Figure 3 is a perspective view showing the pallet in use;

Figure 4 is a side view of a second embodiment of the invention comprising a fence;

Figure 5 is a perspective view of the fence shown in Figure 4; and

Figure 6 shows an alternative method of fixing an upright post of the fence.

The pallet shown in Figure 1 comprises three main structural members 1, intersecting with four secondary structural members 2.

Each of the secondary structural members 2 fits within a slot 5 cut into a side wall of the main structural members 1.

- 5 Where each secondary structural member 2 lies within one of the main structural members 1, the secondary structural member has two square cross-section passageways passing through its side walls.

10 In order to lock the structural members together, smaller, square cross-section components 3 and 4 are pushed inside the main structural members 1 to slide into the square apertures in the side walls of the secondary structural members 2, as shown in Figure 2.

15 It will be seen that the components 3 abut against one upper corner of a main structural member 1, and the components 4 abut against an opposite upper corner of a structural member 1. This produces an extremely robust construction and locks the secondary components 2 against movement with respect to the main structural components 1.

20 The holes in the side walls of the members 2 are made slightly undersize, so that the components 3 and 4 have to be forced into position so that they are then securely held in place by frictional forces.

25 All the components shown in Figures 1 and 2 are initially constructed by extruding plastics material.

30 The two inner secondary structural members 2 are of slightly greater height than the outer two members and they thus provide a chocking effect when a cylindrical load such as a roll is placed on the pallet. Such a roll is shown at 6 in Figure 3.

The arrangement of the components allows variations in roll size to be catered for and the height of the members 2 can be pre-selected during manufacture to provide varying levels of resistance to movement.

- 5 A secondary chock 7 may also be used.

The embodiment of the invention shown in Figure 4 comprises a fence made up of vertical upright posts 8 and cross rails 9.

- 10 With this embodiment, instead of fitting into side slots, the rails 9 pass through rectangular apertures 10 (see Figure 6) in the posts 8. Each rail 9 has a pair of square holes passing vertically down through the rail where each rail lies within one of the posts 8. This enables smaller, square cross section locking components 11 and 12 to be forced down into the posts 8, from the top of the
15 posts, to pass through the holes in the rails 9 and thus lock all the components together. Each component 11 abuts against one inner wall of a post 8 and the other component 12 abuts against the opposite inner wall of a post 8, so that the rails 9 are locked against movement with respect to the posts 8.
- 20 After the locking components 11 and 12 have been inserted, caps 13 are fitted onto the posts.

The arrangement shown in Figures 4 and 5 has foundation bars 14 fitted to the bottom of the posts 8 to facilitate location of the posts in the ground.

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In the alternative arrangement shown in Figure 6, the posts 8 are provided with base plates 15 which can be bolted to a support surface.

- Although the fence arrangement shown in Figures 4 and 5 extend in a straight
30 line, apertures 10 may be provided in adjacent faces in some of the posts so that a fence can be constructed having 90° corners.

The fence posts 8 may not necessarily be square, and apertures 10 may be provided at angles other than 90°, to enable any particular fence to change direction with any desired angle.

- 5 The reader's attention is directed to all papers and documents which are filed concurrently with or previous to this specification in connection with this application and which are open to public inspection with this specification, and the contents of all such papers and documents are incorporated herein by reference.

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All of the features disclosed in this specification (including any accompanying claims, abstract and drawings), and/or all of the steps of any method or process so disclosed, may be combined in any combination, except combinations where at least some of such features and/or steps are mutually
15 exclusive.

Each feature disclosed in this specification (including any accompanying claims, abstract and drawings), may be replaced by alternative features serving the same, equivalent or similar purpose, unless expressly stated
20 otherwise. Thus, unless expressly stated otherwise, each feature disclosed is one example only of a generic series of equivalent or similar features.

The invention is not restricted to the details of the foregoing embodiment(s). The invention extends to any novel one, or any novel combination, of the
25 features disclosed in this specification (including any accompanying claims, abstract and drawings), or to any novel one, or any novel combination, of the steps of any method or process so disclosed.